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(54)【発明の名称】　殺菌殺虫組成物

(57)【要約】
〔構成〕 100重量部の農薬有効成分を 0.1～10重量部の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングした農薬コーティング剤及び0.01～10重量部の糊剤を含む殺菌殺虫組成物、及び 100重量部の農薬有効成分を 0.1～10重量部の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングした農薬コーティング剤に対して0.01～10重量部の糊剤を配合して散布することを特徴とする農薬散布方法。
〔効果〕 従来の農薬コーティング剤に比べて、低濃度においても持続的に防除効果を発揮することができるので有用である。

【特許請求の範囲】

【請求項１】　100重量部の農薬有効成分を 0.1～10重量部の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングした農薬コーティング剤及び0.01～10重量部の糊剤を含む殺菌殺虫組成物。

【請求項２】　100重量部の農薬有効成分を 0.1～10重量部の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングした農薬コーティング剤に対して0.01～10重量部の糊剤を配合して散布することを特徴とする農薬散布方法。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は殺菌殺虫組成物に関し、さらに具体的には、農薬有効成分が低濃度の場合にも持続的な防除効果を有する殺菌殺虫組成物に関する。

【従来の技術】従来、農薬製剤としては水銀剤や砒素剤等の重金属化合物、有機塩素系薬剤、有機燐酸系薬剤が広く用いられてきた。しかし、これらの薬剤はいずれも人体や動物に有害であり、また、有効量を使用した場合には土壌汚染等の環境汚染を惹起することが重大な社会問題となっている。このため、高い防除効果を示し、人体や動植物に対して安全性の高い農薬の開発が進められてきた。特公昭57-48525号公報には、脂肪族多価アルコール脂肪酸エステル及び炭酸水素ナトリウムを主成分とする殺菌剤を開示されている。この刊行物には、該殺菌剤が、各種の植物病害及び果実貯蔵病害に対して高い防除効果を有し、人体や動植物に対して安全性が高いことが教示されている。しかし、従来の農薬と同程度の散布量で使用する場合には、該殺菌剤は高濃度で使用しなければ有効な防除効果を得ることができなかった。また、濃度を低くした場合には、該殺菌剤を多量に使用しなければならないという問題があった。

【０００２】このような問題を解決するために、農薬有効成分粉末 100重量部を脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質の１種または２種以上 0.1～３重量部でコーティングした農薬コーティング剤が提案されている（特開平1-151501号公報）。この農薬コーティング剤は低濃度でも効果的に作用するものの、防除効果の持続性という観点からは満足のいくものではなく、散布当初には有効な防除効果を得ることができるものの、病気が進行するに従って防除価が低下してしまうという問題があった。

【発明が解決しようとする課題】従って本発明は、従来の農薬コーティング剤に比べて、低濃度においても持続的に防除効果を発揮することができる殺菌殺虫組成物を提供することを目的としている。

【０００３】

【課題を解決するための手段】本発明者は上記の課題を解決すべく鋭意努力した結果、 100重量部の農薬有効成分を 0.1～10重量部の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングした農薬コーティング剤の他に、少量の糊剤を含む殺菌殺虫剤成物が、低濃度においても持続的に防除効果を発揮することができることを見出し、本発明を完成するに至った。すなわち本発明は、１００重量部の農薬有効成分を 0.1～10重量部の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングした農薬コーティング剤及び0.01～10重量部の糊剤を含む殺菌殺虫組成物を提供するものである。

【０００４】本発明の殺菌殺虫組成物に含まれる農薬コーティング剤は、 100重量部の農薬有効成分を 0.1～10重量部の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングした農薬コーティング剤であり、公知の方法、例えば特開平1-151501号公報に記載された方法により製造できる該農薬コーティング剤に含まれる農薬有効成分としては、常温で固体粉末となるものが好ましく、例えば各種農園芸用殺菌剤、殺虫剤、除草剤等のいずれでもよい。非水溶性の農薬を使用してもよいが、好適には水溶性のものが使用できる。このような農薬有効成分の具体例としては、8-オキシキノリン銅、塩基性硫酸銅、塩基性塩化銅、塩化第二銅、塩基性炭酸銅、メチル 1-(ブチルカルバモイル）−2-ベンズイミダゾールカルバメート、抗生物質ポリオキシン複合体、O,O-ジエチル−S-ベンジルチオホスフェート、２−sec-ブチルフェニル-N−メチルカルバメート、O,O-ジメチル-2,2,2−トリクロロ-1−ヒドロキシエチルホスフェート等の通常の農薬成分を挙げることができる。これらに加えて、動植物に対して安全性の高い水溶性の炭酸塩、水溶性の重炭酸塩、水溶性の塩化物、水溶性のリン酸塩、水溶性の硫酸塩を使用することができる。例えば炭酸カリウム、炭酸ナトリウム、炭酸アンモニウム等の水溶性の炭酸塩；重炭酸カリウム、重炭酸ナトリウム、重炭酸アンモニウム等の水溶性の重炭酸塩；塩化カリウム、塩化ナトリウム、塩化マグネシウム等の水溶性の塩化物；リン酸水素二ナトリウム、リン酸二水素ナトリウム、リン酸二水素カリウム等の水溶性のリン酸塩；及び硫酸銅等の水溶性の硫酸塩を使用することができる。これらの農薬有効成分は単独で使用してもよいが、２種以上を組み合わせて使用してもよい。

【０００５】該農薬コーティング剤に含まれる脂肪族多価アルコール脂肪酸エステルを構成する脂肪族多価アルコールとしては、炭素原子数３～６の飽和又は不飽和の脂肪族多価アルコールを用いることができるが、例えばグリセリン、プロピレングリコール、ソルビトール、ソルビタン等が好適である。多価アルコール脂肪酸エステルを構成する脂肪酸成分としては、炭素原子数８～22の飽和脂肪酸、例えばカプリル酸、カプリン酸、ラウリン酸、ミリスチン酸、パルミチン酸、ステアリン酸、アラキン酸、ベヘン酸、又は不飽和脂肪酸、例えば、オレイン酸、リノール酸、リノレン酸、リシノレン酸等の単一

脂肪酸の他、混合脂肪酸、例えば、牛脂、綿実油、菜種油、硬化油等の天然動植物油脂由来の脂肪酸が用いられる。

【０００６】該農薬コーティング剤に含まれる脂肪族多価アルコール脂肪酸エステルは、上記の脂肪族多価アルコール及び上記脂肪酸から、常法のエステル化反応又はエステル交換反応により得られるモノー、ジー、又はトリーエステルである。例えば、ソルビタンモノラウレート、ソルビタンモノステアレート、グリセリンラウレート、グリセリンモノカプリレート、グリセリンモノオレエート、グリセリンモノオクトエート、グリセリンモノ大豆油脂肪酸エステル、トリグリセリンモノオレエート、グリセリンモノパルミテート、ポリグリセリン脂肪酸エステル等が好適に使用される。ポリオキシエチレンアルキルフェニルエーテル、ポリオキシエチレンノニルフェニルエーテル、及びラウリルジヒドロキシエチルアミンも好適である。これらの脂肪族多価アルコール脂肪酸エステルは単独で使用してもよいが、２種以上を組み合わせて使用してもよい。該農薬コーティング剤に含まれる燐脂質としては、植物油より分離した植物性レシチン、又は卵黄レシチン、およびこれらより分離されたホスファチジルコリン、ホスファチジルエタノールアミン、ホスファチジルイノシトールなどが使用できる。これらのうち精製レシチンあるいはフオスファチジルエタノールアミン、フォスファチジルイノシトールが好ましい。これらの燐脂質は単独で使用してもよいが、２種以上を組み合わせて使用してもよい。

【０００７】上記の農薬有効成分を上記の脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質でコーティングする方法としては、例えば特開平1-151501号公報に記載された方法によればよいが、例えば、脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質を例えばアセトン等の有機溶媒に溶解し、得られた溶液に粉末状の農薬有効成分を添加混合した後に溶媒を留去する方法を挙げることができる。脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質と農薬有効成分との配合割合は、農薬有効成分 100重量部に対して脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質を0.１～10重量部、好ましくは 0.5～５重量部とすればよい。脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質の配合割合が農薬有効成分に対して0.１重量部未満では、本発明の殺菌殺虫組成物を水で希釈して使用する場合に、エマルジョンが有効に得られなくなる。脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質の配合割合が農薬有効成分に対して10重量部を超えると、脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質が分離してコーティング膜が維持出来ないために、本発明の殺菌殺虫組成物のエマルジョンが有効に得られなくなるという問題が生じる。本発明の殺菌殺虫組成物に含まれる農薬コーティング剤は、一般に粉末状で調製されるが、農薬有効成分の粉末の粒径は、粒径が大きすぎるとコーティング膜を維持するのが難しいので、 100メッシュを通過するものを用いるのが好ましい。また粒径が小さすぎると、コーティング剤を製造した時、期待する濃度が得られない傾向があるので400 メッシュを通過しないものを用いるのが好ましい。農薬コーティング剤は、通常 100メッシュパス程度の粒径、好ましくは200-400 メッシュ程度の粒径となるように調製すればよい。

【０００８】本発明の殺菌殺虫組成物は、上記の農薬コーティング剤の他に0.01～10重量部の糊剤を含むことを特徴としている。糊剤は、粉末状に形成された上記の農薬コーティング剤に粉末状態で混合されていてもよく、または該農薬コーティング剤に形成された脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質のコーティング層の外側に、別のコーティング層として形成されていてもよい。本発明の殺菌殺虫組成物の製造方法としては、例えば、粉末状の該農薬コーティング剤に粉末状糊剤を混合する方法；糊剤を含む溶液に該農薬コーティング剤を添加した後、溶媒を留去する方法；及び得られた農薬コーティング剤を溶媒に分散させて糊剤を添加した後、溶媒を留去する方法等を挙げることができる。糊剤としては、また糊剤としては、カルボキシメチルセルロース（ＣＭＣ）、ポリビニルアルコール（ＰＶＡ）、アルギン酸、アルギン酸ナトリウム、ポリアクリル酸ナトリウム、ピロリん酸ナトリウム、ポリアクリル酸エステル、ポリりん酸ナトリウム、ポリりん酸カリウム、メタりん酸ナトリウムなどの合成高分子物質類などが使用できる。これらのうちＣＭＣが好ましい。

【０００９】糊剤が粉末状の場合には、該農薬コーティング剤に0.01～10重量部の粉末状糊剤を混合して、本発明の殺菌殺虫組成物を製造すればよい。この場合には、 100メッシュパス程度の粒径、好ましくは200-400 メッシュ程度の粒径となるように製造された農薬コーティング剤に対して、 325メッシュパス程度の粉末状糊剤を、100 重量部の農薬有効成分に対して0.01～10重量部の割合で添加して混合すればよい。また、糊剤を水ないしは有機溶剤に溶解した溶液に該農薬コーティング剤を添加した後、溶媒を留去する方法により、該農薬コーティング剤の外側に糊剤がコーティングされた本発明の殺菌殺虫組成物を製造することができる。糊剤が水に溶解しにくい場合には糊剤を溶解しうる有機溶剤を使用することが好ましいが、該有機溶剤は、糊剤のコーティング工程中に脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質のコーティング層が実質的に影響を受けない溶剤であることが好ましい。このような溶剤としては、エタノール、メタノール等を例示することができるが、当業者によれば適宜選択される。また、農薬コーティング剤を水や有機溶剤等の溶媒に分散させて糊剤を添加溶解し、その後に溶媒を留去する方法により製造してもよい。溶媒は、糊剤を溶解し、かつ糊剤のコーティング工程中に脂

肪族多価アルコール脂肪酸エステル及び／又は燐脂質のコーティング剤が実質的に影響を受けない溶媒を適宜選択すればよい。例えば水、メタノール、エタノール等を使用することができる。

【００１０】本発明の殺菌殺虫組成物は、殺菌殺虫組成物に一般に使用されている補助剤、例えば展着剤、湿展剤、固着剤、界面活性剤等を適宜添加して製剤化することもできる。これらの補助剤は、粉末状態で本発明の殺菌殺虫組成物に配合されてもよいが、農薬コーティング剤中や糊剤のコーティング剤中に配合されていてもよい。また、本発明の殺菌殺虫組成物の散布濃度は、有効成分によって異なるので特に限定されないが、例えば約1-500ppm程度で使用すればよい。本発明の別の態様によれば、上記の様にして製造された農薬コーティング剤に対して、0.01～10重量部の糊剤を配合して散布することを特徴とする農薬散布方法が提供される。例えば、農薬コーティング剤を水和剤として使用する場合には、上記の農薬コーティング剤を 100～1000 ppm程度の濃度になるように調製した水和剤に対して、農薬有効成分 100重量部に対して0.01～10重量部の割合になるように上記の糊剤を溶解して散布すればよい。理論に拘泥するわけではないが、本発明の方法により散布を行うと、糊剤及び農薬コーティング剤に含まれる農薬有効成分は速やかに水に溶解するが、脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質のコーティング層は水に溶解しないので、脂肪族多価アルコール脂肪酸エステル及び／又は燐脂質により形成されたカプセル中に高濃度の農薬溶液が保持される。一方、該カプセルの外側は溶解した糊剤に接触するので、高濃度の農薬溶液を含む該カプセルは病原菌や害虫に容易に付着し、持続的に殺菌、殺虫効果を発揮する。本発明の殺菌殺虫組成物に水を添加して散布する場合にも、同様の作用機構により低濃度でも持続的に殺菌、殺虫効果を発揮する。

【００１１】

【実施例】以下に本発明を実施例によりさらに具体的に説明するが、本発明はこれらに限定されることはない。

実施例１

ジグリセリンラウレート２ｇをアセトン100 mlに溶解した。この溶液に炭酸水素ナトリウムの微粉末100 ｇ（100メッシュ通過90％）を添加してよく撹拌した後に、回転式エバポレーターを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてカルボキシメチルセルロース（ＣＭＣ）0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

実施例２

グリセリンモノカプリレート４ｇをアセトン100 mlに溶解した。この溶液に炭酸水素ナトリウムの微粉末100 ｇ（100 メッシュ通過90％）を添加してよく撹拌した後、回転式エバポレーターを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてカルボキシメチルセルロース（ＣＭＣ）0.02ｇを添加混合して、流動性のよい粉末水溶剤とした。

【００１２】実施例３

グリセリンモノラウレート２ｇ及びソルビタンステアレート２ｇをエタノール100 mlに溶解した。この溶液に塩化ナトリウムの微粉末100 ｇ(100メッシュ通過90％）を添加してよく撹拌した後、回転式エバポレーターを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてカルボキシメチルセルロース（ＣＭＣ）0.1 ｇを添加、混合して、流動性のよい粉末水溶剤とした。

実施例４

グリセリンモノカプリレート２ｇ及びジグリセリンラウレート２ｇをメタノール100 mlに溶解した。この溶液に炭酸水素カリウムの微粉末100 ｇ(100メッシュ通過90％）を添加してよく撹拌した後、回転式エバポレーターを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてポリアクリル酸ソーダ0.０５ｇを添加混合して、流動性のよい粉末水溶剤とした。

実施例５

グリセリンモノラウレート４ｇ、ジグリセリンオレート２ｇを、アセトン10ml、メタノール５mlにそれぞれ溶解した。グリセリンモノラウレートの溶液に炭酸カリウムの微粉末100 ｇ(100メッシュ通過90％）を添加してよく撹拌した後、熱風下で乾燥し、さらにジグリセリンオレートの溶液を添加してよく撹拌した後、熱風下で溶媒を完全に除去して粉末とした。この粉末に糊剤としてポリアクリル酸ソーダ0.08ｇを添加混合して、流動性のよい粉末水溶剤とした。

【００１３】実施例６

グリセリンモノオレート２ｇ、ジグリセリンオレート２ｇを、アセトン50ml、メタノール50mlにそれぞれ溶解した。グリセリンモノオレートの溶液に炭酸水素アンモニウムの微粉末100 ｇ(100メッシュ通過90％）を添加してよく撹拌した後、回転式エバポレーターを用いて溶媒を完全に留去し、さらにジグリセリンオレートの溶液を添加してよく撹拌した後、熱風下で溶媒を完全に除去して粉末とした。この粉末に糊剤としてアルギン酸ソーダ0.05ｇを添加混合して、流動性のよい粉末水和剤とした。

実施例７

グリセリンラウレート４ｇをメタノール100ml に溶解した。これに炭酸アンモニウムの微粉末80ｇ(100メッシュ通過90％）を添加してよく撹拌した後、回転式エバポレーターを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてアルギン酸0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

実施例８

ジグリセリンオレート２ｇ、ヘキサグリセリンラウレート２ｇを、アセトン50ml、メタノール50mlにそれぞれ溶解した。ジグリセリンオレートの溶液に炭酸カルシウムの微粉末100 ｇ(100メッシュ通過90％）を添加してよく

撹拌した後、回転式エバポレータを用いて溶媒を完全に留去し、さらにヘキサグリセリンラウレートの溶液を添加してよく撹拌した後、回転式エバポレータで溶媒を完全に留去して粉末とした。この粉末に糊剤としてピロりん酸ナトリウム0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

【0014】実施例9

ジグリセリンラウレート2ｇ、デカグリセリンラウレート2ｇを、エタノール50ml、アセトン50mlにそれぞれ溶解した。前者にりん酸二ナトリウムの微粉末100ｇ(100メッシュ通過90%)を添加してよく撹拌した後、回転式エバポレータを用いて溶媒を完全に留去し、さらにデカグリセリンラウレートの溶液を添加してよく撹拌した後、回転式エバポレータで溶媒を完全に留去して粉末とした。この粉末に糊剤としてポリりん酸ナトリウム0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

実施例10

プロピレングリコールモノラウレート4ｇ及びソルビタンラウレート2ｇをエタノール100 mlに溶解した。この溶液にりん酸一ナトリウムの微粉末100ｇ(100メッシュ通過90%)を添加してよく撹拌した後、回転式エバポレータを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてポリりん酸ナトリウム0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

実施例11

ジグリセリンラウレート2ｇ、デカグリセリンラウレート2ｇを、エタノール50ml、アセトン50mlにそれぞれ溶解した。ジグリセリンラウレートの溶液にりん酸二カリウムの微粉末100ｇ(100メッシュ通過90%)を添加してよく撹拌した後、回転式エバポレータを用いて溶媒を完全に留去し、さらにデカグリセリンラウレートの溶液を添加してよく撹拌した後、回転式エバポレータで溶媒を完全に留去して粉末とした。この粉末に糊剤としてポリりん酸ナトリウム0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

【0015】実施例12

プロピレングリコールモノラウレート4ｇ及びソルビタンラウレート2ｇをエタノール100 mlに溶解した。この溶液にりん酸一カリウムの微粉末100ｇ(100メッシュ通過90%)を添加してよく撹拌した後、回転式エバポレータを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてポリりん酸ナトリウム0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

実施例13

グリセリンモノオレート4ｇをアセトン100ml に溶解した。これに無水硫酸銅の微粉末100ｇ(100メッシュ通過90%)を添加してよく撹拌した後、回転式エバポレータを用いて溶媒を完全に留去して粉末とした。この粉末に糊剤としてアルギン酸0.05ｇを添加混合して、流動性のよい粉末水溶剤とした。

試験例1～13

本発明の殺菌殺虫組成物の効果を、公知の農薬コーティング剤（特開平1-151501号公報記載のもの）及び従来の薬剤水溶液と比較した。それぞれの薬剤について、250ppm及び125ppmの濃度の製剤を調製し、3日目、6日目及び10日目の防除価（%）を算出するとともに、薬害の有無を観察することにより比較を行った。125ppmの濃度の製剤に関する防除価は（ ）内に示し、薬害については250ppmの製剤と同様な効果が得られたのでまとめて記載した。薬剤を含有しない製剤を散布したときの効果を、比較のために対照の欄に記載した。

【0016】表1に示された結果から、本発明の殺菌殺虫組成物が、従来の薬剤水溶液又は公知の農薬コーティング剤に比べて、125ppm及び250ppmの低濃度においても防除価が著しく向上しており、6日目、10日目にも顕著な防除価を示すことから、持続性に優れることが明らかである。

【表1】

キュウリうどんこ病治療効果

供試薬剤添加物	濃度 (ppm)	治療効果（%） 3日	6日	10日	薬害
$NaHCO_3$コーティング剤/CMC	250(125)	95(87)	93(85)	93(80)	なし
試験例-1 $NaHCO_3$コーティング剤			90(55)	85(51)	80(48)	〃
（実施例-1) $NaHCO_3$			30(20)	27(17)	20(10)	〃
Na_2CO_3コーティング剤/CMC			90(48)	86(45)	85(45)	〃
試験例-2 Na_2CO_3コーティング剤			89(48)	84(46)	45(27)	〃
（実施例-2) Na_2CO_3			14(5)	12(0)	5(0)	〃

NaClコーティング剤/CMC　85(50) 80(45) 65(27) 〃
試験例-3　NaClコーティング剤　90(45) 85(41) 41(18) 〃
（実施例-3) NaCl　10(0) 9(0) 5(0) 〃

$KHCO_3$ コーティング剤
/ ポリアクリル酸ソーダ 250(125) 96(89) 93(87) 91(87) 〃
試験例-4　$KHCO_3$ コーティング剤　98(58) 92(57) 57(50) 〃
（実施例-4) $KHCO_3$　12(10) 10(5) 5(0) 〃

K_2CO_3 コーティング剤
/ ポリアクリル酸ソーダ　80(45) 79(40) 79(40) 〃
試験例-5　K_2CO_3 コーティング剤　91(45) 88(42) 42(20) 〃
（実施例-5) K_2CO_3　10(5) 10(5) 5(0) 〃

$(NH_4)HCO_3$ コーティング
剤/ アルギン酸　250(125) 93(70) 91(66) 90(66) 〃
試験例-6　$(NH_4)HCO_3$ コーティング剤　83(64) 80(53) 53(40) 〃
（実施例-6) $(NH_4)HCO_3$　12(5) 9(0) 0(0) 〃

$(NH_4)_2CO_3$ コーティング剤
/ アルギン酸　88(66) 86(61) 85(62) 〃
試験例-7　$(NH_4)_2CO_3$ コーティング剤　86(52) 82(51) 51(35) 〃
（実施例-7) $(NH_4)_2CO_3$　9(0) 7(0) 0(0) 〃

$CaCO_3$ コーティング剤
/ ピロりん酸ナトリウム 250(125) 86(50) 85(48) 81(48) 〃
試験例-8　$CaCO_3$ コーティング剤　87(50) 81(47) 47(27) 〃
（実施例-8) $CaCO_3$　7(0) 5(0) 0(0) 〃

Na_2HPO_4 コーティング剤
/ ポリりん酸ナトリウム 250(125) 90(80) 88(71) 87(70) 〃
試験例-9　Na_2HPO_4 コーティング剤　90(51) 81(50) 50(25) 〃
（実施例-9) Na_2HPO_4　14(6) 10(3) 5(0) 〃

NaH_2PO_4 コーティング剤
/ ポリりん酸ナトリウム　86(50) 82(44) 83(44) 〃
試験例-10　NaH_2PO_4 コーティング剤　100(50) 93(46) 46(18) 〃
（実施例-10)NaH_2PO_4　5(0) 0(0) 0(0) 〃

K_2HPO_4コーティング剤
/ ポリりん酸ナトリウム 250(125) 79(44) 75(40) 75(40) 〃
試験例-11　K_2HPO_4コーティング剤　94(51) 93(49) 49(20) 〃
（実施例-11)K_2HPO_4　6(0) 5(0) 3(0) 〃

KH_2PO_4コーティング剤
/ ポリりん酸ナトリウム　83(55) 80(51) 80(51) 〃
試験例-12　KH_2PO_4コーティング剤　90(48) 89(46) 46(20) 〃
（実施例-12)KH_2PO_4　11(5) 7(0) 3(0) 〃

$CuSO_4$ コーティング剤

/アルギン酸	95(77) 95(70) 92(70) 〃
試験例-13 $CuSO_4$ コーティング剤	90(75) 88(70) 52(34) 〃
（実施例-13)$CuSO_4$	19(15) 17(13) 15(13) 〃
Check（水）	0　0　0

【００１７】試験例１４
糊剤の種類の異なる本発明の殺菌殺虫組成物水溶剤による治療効果を検討した。250ppm及び125ppmの濃度の製剤を調整し、３日目、６日目及び１０日目の防除価（%）を算出するとともに、薬害の有無を観察することにより比較を行った。125ppmの濃度の製剤に関する防除価は（ ）内に示し、薬害については250ppmの製剤と同様な効果が得られたのでまとめて記載した。本発明の殺菌殺虫組成物水溶液は、糊剤の種類にかかわらず、有効な治療効果と持続性を有していた。結果を表２に示す。
【００１８】
【表２】

キュウリうどんこ病治療効果

供試薬剤添加物	濃度（ppm）	治療価（%）3日 6日 10日	薬害
$NaHCO_3$コーティング/CMC	250(125)	96(85) 96(85) 94(83)	なし
/アルギン酸	250(125)	95(85) 94(85) 94(82)	〃
/カゼイン	〃 〃	90(81) 90(82) 90(80)	〃
/ポリアクリル酸ソーダ	〃 〃	95(87) 95(86) 95(86)	〃
/ピロりん酸ナトリウム	〃 〃	94(82) 93(80) 93(79)	〃
/ポリりん酸ナトリウム	〃 〃	93(80) 91(80) 91(77)	〃
/メタりん酸ナトリウム	〃 〃	80(70) 80(69) 77(65)	〃
$NaHCO_3$コーティング	〃 〃	64(51) 87(62) 50(49)	〃

【００１９】試験例１５
カンキツ黒点病に対して、$NaHCO_3$を水溶液として使用したとき（△−△）、特開平1-151501号公報記載の農薬コーティング剤を希釈して使用したとき（□−□）、及び本発明の殺菌殺虫組成物を希釈して使用したとき（○−○）の防除価の比較を図１に示した。薬剤濃度を０～３００ppmまで変化させると、従来の水溶液では300ppmにおいても防除価は５％程度であり、特開平1-15150.号公報記載の農薬コーティング剤でも250ppmの濃度における防除価は６０％程度であったのに対し、本発明の殺菌殺虫組成物は125ppmで80%を越える防除価を示した。本発明の殺菌殺虫組成物が、他の二者に比べ低濃度でもはるかに有効に作用することが明らかである。
試験例１６
ペチュニア灰色かび病に対して、$KHCO_3$を水溶液として使用したとき（△−△）、特開平1-151501号公報記載の農薬コーティング剤を希釈して使用したとき（□−□）、及び本発明の殺菌殺虫組成物を希釈して使用したとき（○−○）の防除価の比較を図２に示した。本発明の殺菌殺虫組成物が、他の二者に比べ低濃度でもはるかに有効に作用していることが明らかである。

【００２０】試験例１７
本発明の殺菌殺虫組成物水溶液の殺虫効果を、公知の農薬コーティング剤（特開平1-151501号公報のもの）及び従来の薬剤水溶液の殺虫効果と比較した。それぞれの薬剤について、250ppm及び125ppmの濃度の製剤を調節し、
モモアカアブラムシの殺虫率（%）及びシミカンハダニの殺ダニ率（%）を算出することにより比較を行った。また、イセリヤカイガラムシの抑制効果について、効果があるものを＋、効果がより大きいものを＋＋、効果がないものをーで示した。125ppmの濃度に関しては（ ）内に示した。本発明の殺菌殺虫組成物の水溶液は、従来の薬剤水溶液又は公知の農薬コーティング剤に比べて殺虫効果が高いことが明らかである。モモアカアブラムシに対する殺虫率については実施例１～13の殺菌殺虫組成物が、ミカンハダニに対する殺ダニ率については実施例１、４、６、８、10、11の殺菌殺虫組成物が、またイセリヤカイガラムシに対する抑制効果については実施例１、４、６、11、13の殺菌殺虫組成物が他の薬剤に比べて優れていることが明らかである。結果を表３に示す。
【００２１】
【表３】

殺虫・殺ダニ効果

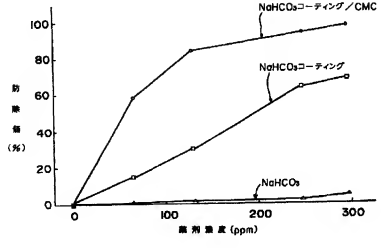
	濃度　モモアカ　ミカンハダニ　イセリヤカ 供試薬剤　(ppm)　アブラムシ 殺ダニ率　イガラムシ 殺虫率(%)　(%)　抑制効果
	$NaHCO_3$コーティング 剤/CMC　250(125) 90(55)　97(62)　＋＋（＋＋）
実施例	$NaHCO_3$コーティング剤　75(31)　88(46)　＋（－）
1	$NaHCO_3$　20(0)　27(10)　－（－）
	Na_2CO_3コーティング 剤/CMC　98(51)
	Na_2CO_3コーティング剤　58(23)
2	Na_2CO_3　10(0)
	NaClコーティング 剤/CMC　83(40)
	NaClコーティング剤　55(26)
3	NaCl　17(10)
	$KHCO_3$コーティング 剤/ ポリアクリル酸　100(88)　98(84)　＋＋（＋＋） ソーダ
	$KHCO_3$コーティング剤　89(52)　95(61)　＋＋（＋）
4	$KHCO_3$　20(15)　50(20)　－（－）
	K_2CO_3コーティング 剤/ ポリアクリル酸　96(50) ソーダ
	K_2CO_3コーティング剤　80(31)
5	K_2CO_3　27(11)
	$(NH_4)HCO_3$コーティング 剤/ アルギン酸　90(44)　97(73)　＋＋（＋＋）
	$(NH_4)HCO_3$コーティング剤 81(25)　88(48)　＋＋（＋）
6	$(NH_4)HCO_3$　20(11)　20(7)　－（－）
	$(NH_4)_2CO_3$コーティング 剤/ アルギン酸　94(59)
	$(NH_4)_2CO_3$コーティング剤 79(48)
7	$(NH_4)_2CO_3$　10(0)
	$CaCO_3$コーティング 剤/ ピロりん酸ナトリウム 72(40)　90(71)
	$CaCO_3$コーティング剤　30(18)　83(40)
8	$CaCO_3$　0(0)　21(7)
	Na_2HPO_4コーティング剤 / ポリりん酸ナトリウム　97(62)
	Na_2HPO_4コーティング剤　77(35)
9	Na_2HPO_4　10(0)

	NaH_2PO_4 コーティング剤 / ポリりん酸ナトリウム	91(72)	93(87)
	NaH_2PO_4 コーティング剤	70(33)	76(42)
10	NaH_2PO_4	11(0)	22(7)
	K_2HPO_4コーティング剤 / カゼイン	95(66)	92(80)　++(++)
	K_2HPO_4コーティング剤	77(37)	75(32)　+(−)
11	K_2HPO_4	12(7)	20(11)　−(−)
	KH_2PO_4コーティング剤 / カゼイン	93(71)	
	KH_2PO_4コーティング剤	68(38)	
12	KH_2PO_4	15(10)	
	$CuSO_4$ コーティング剤 / カゼイン	250(125)	100(65)　++(++)
	$CuSO_4$ コーティング剤	80(32)	++(−)
13	$CuSO_4$	36(12)	−(−)
	Check (水)	0	0　−

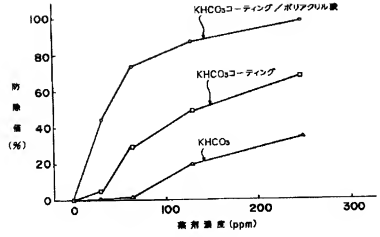
モモアカアブラムシ　Myzus persicae 英名 greem peach aphid
ミカンハダニ　Panonychus citri Nc Gregor 英名 Citrus red mite
イセリヤカイガラムシ Icerya purchst Maskell 英名 Cottonycushion scale
【発明の効果】本発明の殺菌殺虫組成物は、従来の薬剤に比べ、低濃度であっても持続的に効果を発揮するので有用である。

【図面の簡単な説明】
【図1】本発明の殺菌殺虫組成物（○−○）、特開平1-151501号公報記載の農薬コーティング剤（□−□）、及び$NaHCO_3$水溶液（△−△）のカンキツ黒点病に対する防除価を比較した図である。
【図2】本発明の殺菌殺虫組成物（○−○）、特開平1-151501号公報記載の農薬コーティング剤（□−□）、及び$KHCO_3$水溶液（△−△）のペチュニア灰色かび病に対する防除価を比較した図である。

【図1】



【図２】


KHCO₃コーティング／ポリアクリル酸
KHCO₃コーティング
KHCO₃
防除価（%）
100
80
60
40
20
0
0
100
200
300
薬剤濃度（ppm）

AN 1994-027622 [199404] WPIDS Full-text
DNC C1994-012708 [199404]
TI *Coated pesticidal compositions for prolonged action* - are coated with an aliphatic acid ester of an aliphatic poly:ol and/cr a phospholipid and a sizing agent
DC A97; C07
IN ARIMOTO Y; HOMMA Y; HONMA Y
PA (RIKA-I) RIKAGAKU K; (RIKA-C) RIKAGAKU KENKYUSHO
CYC 6
PI EP 579951 A1 19940126 (199404)* EN 13[0]
JP 06040806 A 19940215 (199411) JA 10[0] <--
JP 2711619 B2 19980210 (199811) JA 12[0]
EP 579951 B1 19980909 (199840) EN
DE 69320891 E 19981015 (199847) DE
ES 2120461 T3 19981101 (199851) ES
ADT EP 579951 A1 EP 1993-109572 19930616; JP 06040806 A JP 1992-197228 19920723; JP 2711619 B2 JP 1992-197228 19920723; DE 69320891 E DE 1993-69320891 19930616; EP 579951 B1 EP 1993-109572 19930616; DE 69320891 E EP 1993-109572 19930616; ES 2120461 T3 EP 1993-109572 19930616
FDT DE 69320891 E Based on EP 579951 A; ES 2120461 T3 Based on EP 579951 A; JP 2711619 B2 Previous Publ JP 06040806 A
PRAI JP 1992-197228 19920723
IC ICM A01N0025-26
IPCR A01N0025-26 [I,A]; A01N0025-26 [I,C]
EPC A01N0025-26
FCL A01N0025-26
FTRM 4H011; 4H011/AA01; 4H011/AA03; 4H011/AB01; 4H011/AC01; 4H011/AC04; 4H011/BA01; 4H011/BB18; 4H011/BC06; 4H011/BC17; 4H011/BC18; 4H011/BC19; 4H011/DA04; 4H011/DA15; 4H011/DC05; 4H011/DC08; 4H011/DC10; 4H011/DE17; 4H011/DF03; 4H011/DG10; 4H011/DG15; 4H011/DH02; 4H011/DH10
AB EP 579951 A1 UPAB: 20050701
Pesticidal composition comprises a coated pesticide consisting of 100 pts.weight of an active pesticidal component coated with 0.1-10 pts.weight of one or more ingredients chosen from aliphatic acid esters of aliphatic polyols, and/or phospholipids and 0.01-10 pts.weight of a sizing agent. Pref. the aliphatic ester of an aliphatic polyol is sorbitan monooleate, sorbitan monostearate, glycerin laurate, glycerin monocaprylate, etc. The phospholipid is purified lecithin, phosphatidyl ethanol amine and/or phosphatidyl inositol. The sizing agent is carboxymethyl cellulose, polyvinyl alcohol, alginic acid, sodium alginate, etc. USE/ADVANTAGE - The composition can contain any pesticide, such as various germicides, insecticides and herbicides for agricultural and horticultural use. The composition shows prolonged pesticidal effect even when the active pesticidal ingredient is used at a low concentration
FS CPI
MC CPI: A12-W04C; C04-B01B; C04-C02A2; C04-C02D; C04-C03B; C04-C03C; C05-B01P; C05-B02A3; C05-C04; C10-E04C; C12-M11G; C14-A06; C14-B01; C14-B04B; C14-V01

FUNGICIDAL AND INSECTICIDAL COMPOSITION

Publication number: JP6040806 (A)

Publication date: 1994-02-15

Inventor(s): HONMA YASUO; ARIMOTO YUTAKA +

Applicant(s): RIKAGAKU KENKYUSHO +

Classification:

- **international:** ***A01N25/26;*** **A01N25/26;** (IPC1-7): A01N25/26

- **European:** A01N25/26

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- EP0579951 (A1)
- EP0579951 (B1)
- ES2120461 (T3)

Abstract of JP 6040806 (A)

PURPOSE:To provide a fungicidal and insecticidal composition which can exert continuous controlling effect even in a lower concentration compared with the conventional agrochemical coating agent. CONSTITUTION:The fungicidal and insecticidal composition contains an agrochemical coating agent which is prepared by coating 100 pts.wt. of the active ingredient as an agrochemical with 0.1 to 10 pts.wt. of an aliphatic polyhydric alcohol fatty acid ester and/or a phospholipid, and 0.01 to 10 pts.wt. of a glue and the resulting composition is sprayed.

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(72)Inventor : HONMA YASUO
ARIMOTO YUTAKA

(54) FUNGICIDAL AND INSECTICIDAL COMPOSITION

(57)Abstract:
PURPOSE: To provide a fungicidal and insecticidal composition which can exert continuous controlling effect even in a lower concentration compared with the conventional agrochemical coating agent.
CONSTITUTION: The fungicidal and insecticidal composition contains an agrochemical coating agent which is prepared by coating 100 pts.wt. of the active ingredient as an agrochemical with 0.1 to 10 pts.wt. of an aliphatic polyhydric alcohol fatty acid ester and/or a phospholipid, and 0.01 to 10 pts.wt. of a glue and the resulting composition is sprayed.

Machine translation JP6040806

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(51)**The 5th edition of International Patent Classification**

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(57) **Abstract**
Elements of the InventionA sterilization insect-killing constituent containing an agricultural-chemicals coating agent which coated an agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, and a sizing agent of 0.01 to 10 weight section, And a crop-dusting method blending and sprinkling a sizing agent of 0.01 to 10 weight section to an agricultural-chemicals coating agent which coated an agrochemical active ingredient of 100 weight section with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section.
EffectCompared with the conventional agricultural-chemicals coating agent, since an extermination effect can be continuously demonstrated also in low concentration, it is useful.

Claim(s)
Claim 1A sterilization insect-killing constituent containing an agricultural-chemicals coating agent which coated an agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, and a sizing agent of 0.01 to 10 weight section.
Claim 2A crop-dusting method blending and sprinkling a sizing agent of 0.01 to 10 weight section to an agricultural-chemicals coating agent which coated an agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section.

Detailed Description of the Invention
0001
Industrial Application About a sterilization insect-killing constituent, this invention still more

specifically relates to the sterilization insect-killing constituent which has a continuous extermination effect, also when an agrochemical active ingredient is low concentration.

Description of the Prior Art Conventionally, as agrochemical preparation, heavy metal compounds, such as mercurial and an arsenical, an organochlorine chemical, and organic phosphoric acid system drugs have been used widely. However, each of these drugs is harmful to a human body or an animal, and when an effective dose is used, it is a serious social problem to cause environmental pollution, such as soil pollution. For this reason, the high extermination effect was shown and development of agricultural chemicals with high safety has been furthered to a human body or animals and plants. The germicide which uses aliphatic-polyhydric-alcohol aliphatic series ester and sodium bicarbonate as the main ingredients is indicated by JP,S57-48525,B. This germicide has a high extermination effect in this publication to various kinds of plant disease and fruits storage diseases, and it is taught to it to a human body or animals and plants that safety is high. However, when using it with an application amount comparable as the conventional agricultural chemicals, if this germicide was not used at high concentration, it was not able to acquire an effective extermination effect. When concentration was made low, there was a problem that this germicide had to be used so much.

0002 In order to solve such a problem, the agricultural-chemicals coating agent which coated agrochemical active ingredient powder 100 weight section with 0.1 to one-sort or two or more sort 3 weight section of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid is proposed (JP,H1-151501,A). Although this agricultural-chemicals coating agent acted effectively also low concentration, from a viewpoint of the durability of an extermination effect, it was not satisfactory, and there was a problem whose illness of what can acquire an effective extermination effect reaches an advanced stage that it will be alike, therefore preventive value will fall in the time of spraying.

Problem to be solved by the invention Therefore, an object of this invention is to provide the sterilization insect-killing constituent which can demonstrate an extermination effect continuously also in low concentration compared with the conventional agricultural-chemicals coating agent.

0003

Means for solving problem As a result of trying hard wholeheartedly that above-mentioned SUBJECT should be solved, this invention person besides the agricultural-chemicals coating agent which coated the agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, The sterilization insect-killing constituent containing a small amount of sizing agents finds out that an extermination effect can be continuously demonstrated also in low concentration, and came to complete this invention. That is, this invention provides the sterilization insect-killing constituent containing the agricultural-chemicals coating agent which coated the agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, and the sizing agent of 0.01 to 10 weight section.

0004 An agricultural-chemicals coating agent contained in a sterilization insect-killing constituent of this invention, It is the agricultural-chemicals coating agent which coated an agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, As an agrochemical active ingredient contained in this agricultural-chemicals coating agent that can be manufactured by a publicly known method, for example, a method indicated to JP,H1-151501,A, what serves as solid powder at ordinary temperature may be preferred, for example, any, such as various germicides for agriculture and horticulture, an insecticide, and a weed killer, may be sufficient as it. Although agricultural chemicals of nonaqueous solubility may be used, a water-soluble thing can be used conveniently. As an example of such an agrochemical active ingredient, a copper 8 hydroxyquinolinolate, Basic copper sulfate, copper oxychloride, a cupric chloride, basic copper carbonate, a methyl 1-(butylcarbamoyl)-2-benzimidazole carbamate, The usual agrochemical components, such as an antibiotic polyoxin complex, O,O-diethyl- S-benzylthio phosphate, a 2-sec-buthylphenyl N-methyl carbamate, and O,O-dimethyl- 2,2,2-trichloro-1-hydroxyethyl phosphate, can be mentioned. In addition to these, water-soluble carbonate with high safety, water-soluble bicarbonate, a water-soluble chloride, a water-soluble phosphate, and water-soluble sulfate can be used to animals and plants. For example, water-soluble carbonate of potassium carbonate, sodium carbonate, ammonium carbonate, etc.; Potassium bicarbonate, Water-soluble bicarbonate of sodium bicarbonate, ammonium bicarbonate, etc.; Potassium chloride, A water-soluble chloride of sodium chloride, a magnesium chloride, etc.; water-soluble sulfate of water-soluble phosphate; of disodium hydrogenphosphate, a sodium

dihydrogenphosphate, potassium dihydrogen phosphate, etc., copper sulfate, etc. can be used. Although these agrochemical active ingredients may be used alone, it may be used combining two or more sorts.

0005 As aliphatic polyhydric alcohol which constitutes aliphatic-polyhydric-alcohol fatty acid ester contained in this agricultural-chemicals coating agent, although aliphatic polyhydric alcohol of saturation with 3-6 carbon atoms or an unsaturation can be used, For example, glycerin, propylene glycol, sorbitol, sorbitan, etc. are preferred. As a fatty acid component which constitutes polyhydric alcohol fatty acid ester, Saturated fatty acid with 8-22 carbon atoms, for example, caprylic acid, capric acid, Lauric acid, myristic acid, Barh Myzin acid, stearic acid, arachin acid, Fatty acid of natural animal-and-vegetable-oils fat origin, such as beef tallow, cottonseed cake oil, mixed fatty acid, for example, oleum rapae, besides single fatty acid, such as behenic acid or unsaturated fatty acid, for example, oleic acid, linolic acid, linolenic acid, and RISHINOREN acid, and hydrogenated oil, is used.

0006 Aliphatic-polyhydric-alcohol fatty acid ester contained in this agricultural-chemicals coating agent is mono- obtained from above-mentioned aliphatic polyhydric alcohol and the above-mentioned fatty acid by an esterification reaction or an ester exchange reaction of a conventional method, di-, or tri-ester. For example, sorbitan monolaurate, sorbitan monostearate, Glycerin laurate, a glycerin mono- KAPURI rate, glycerin monooleate, Glycerin mono- octoate, glycerin mono- soybean oil fat fatty acid ester, triglycerol monooleate, glycerin monopalmitate, polyglyceryl fatty acid ester, etc. are used suitably. Polyoxyethylene alkyl phenyl ether, polyoxyethylene nonylphenyl ether, and lauryl dihydroxyethylamine are also preferred. Although these aliphatic-polyhydric-alcohol fatty acid ester may be used alone, it may be used combining two or more sorts. As phospholipid contained in this agricultural-chemicals coating agent, vegetable lecithin separated from vegetable oil or yolk lecithin and phosphatidylcholine separated from these, phosphatidylethanolamine, phosphatidylinositol, etc. can be used. Refined lecithin or a phosphatidylethanolamine, and a phosphatidylinositol are **among these** preferred. Although such phospholipid may be used alone, it may be used combining two or more sorts.

0007 As a method of coating the above-mentioned agrochemical active ingredient with above-mentioned aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid, For example, although what is necessary is to just be based on the method indicated to JP,H1-151501,A, For example, after carrying out addition mixing of the agrochemical active ingredient powdered in the solution obtained by dissolving aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid in organic solvents, such as acetone, the method of distilling off a solvent can be mentioned. The blending ratio of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid, and an agrochemical active ingredient should just make preferably aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid 0.5 to 5 weight section 0.1 to 10 weight section to agrochemical active ingredient 100 weight section. When the blending ratio of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid uses the sterilization insect-killing constituent of this invention by them to an agrochemical active ingredient, diluting it with less than 0.1 weight sections with water, an emulsion is no longer obtained effectively. Since aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid dissociate and coating membrane cannot be maintained if the blending ratio of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid exceeds ten weight sections to an agrochemical active ingredient, The problem that the emulsion of the sterilization insect-killing constituent of this invention is no longer obtained effectively arises. As for the particle diameter of the powder of an agrochemical active ingredient, although the agricultural-chemicals coating agent contained in the sterilization insect-killing constituent of this invention is generally powdered and it is prepared, since it is difficult to maintain coating membrane when particle diameter is too large, it is preferred to use what passes 100 meshes. Since there is a tendency for the concentration to expect not to be obtained when particle diameter was too small and a coating agent is manufactured, it is 400. It is preferred to use what does not pass a mesh. an agricultural-chemicals coating agent -- usually -- -- the particle diameter of about 100 mesh passes -- what is necessary is just to prepare so that it may become the particle diameter about 200-400 mesh preferably

0008 The sterilization insect-killing constituent of this invention is characterized by including the sizing agent of 0.01 to 10 weight section other than the above-mentioned agricultural-chemicals coating agent. The sizing agent may be formed in the outside of the coating layer of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid which may be mixed by powdered voice by the above-mentioned agricultural-chemicals coating agent formed

powdered, or were formed in this agricultural-chemicals coating agent as another coating layer. As a manufacturing method of the sterilization insect-killing constituent of this invention, For example, the method of mixing a powdered sizing agent to this powdered agricultural-chemicals coating agent; after making a solvent distribute method; and the obtained agricultural-chemicals coating agent which distill off a solvent after adding this agricultural-chemicals coating agent in the solution containing a sizing agent and adding a sizing agent, the method of distilling off a solvent, etc. can be mentioned. As a sizing agent and a sizing agent, carboxymethyl cellulose (CMC), Synthetic macromolecule substances, such as polyvinyl alcohol (PVA), alginic acid, sodium alginate, sodium polyacrylate, Pirro sodium phosphate, polyacrylic ester, poly sodium phosphate, poly phosphoric acid potassium, and meta-sodium phosphate, can be used. CMC is **among these** preferred.

0009 What is necessary is to mix the powdered sizing agent of 0.01 to 10 weight section to this agricultural-chemicals coating agent, and just to manufacture the sterilization insect-killing constituent of this invention, when a sizing agent is powdered. In this case, the particle diameter of about 100 mesh passes and the agricultural-chemicals coating agent manufactured so that it might become the particle diameter about 200-400 mesh preferably are received, It is a powdered sizing agent of about 325 mesh passes 100 What is necessary is to add at a rate of 0.01 to 10 weight section to the agrochemical active ingredient of a weight section, and just to mix. After adding this agricultural-chemicals coating agent in the solution which dissolved the sizing agent in water or an organic solvent, the sterilization insect-killing constituent of this invention in which the outside of this agricultural-chemicals coating agent was coated with the sizing agent can be manufactured by the method of distilling off a solvent. When it is hard to dissolve a sizing agent in water, it is preferred to use the organic solvent which may dissolve a sizing agent, but this organic solvent has preferred ** which is a solvent in which the coating layer of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid is not substantially influenced into the coating process of a sizing agent. As such a solvent, although ethanol, methanol, etc. can be illustrated, according to the person skilled in the art, it is chosen suitably. Solvents, such as water and an organic solvent, may be made to distribute an agricultural-chemicals coating agent, the addition dissolution of the sizing agent may be carried out, and it may manufacture by the method of distilling off a solvent after that. The solvent should just choose suitably the solvent which dissolves a sizing agent and in which the coating layer of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid is not substantially influenced into the coating process of a sizing agent. For example, water, methanol, ethanol, etc. can be used.

0010 The sterilization insect-killing constituent of this invention can be added suitably, and can also pharmaceutical-preparation-ize the adjuvant currently generally used for the sterilization insect-killing constituent, for example, a spreading agent, a ** exhibition agent, an adhesive agent, a surface-active agent, etc. Although these adjuvants may be blended with the sterilization insect-killing constituent of this invention by powdered voice, they may be blended into the agricultural-chemicals coating agent and the coating layer of a sizing agent. What is necessary is not to limit it, especially since the spraying concentration of the sterilization insect-killing constituent of this invention changes with active principles, but just to use it, for example by about about 1 - 500 ppm. According to another mode of this invention, the crop-dusting method blending and sprinkling the sizing agent of 0.01 to 10 weight section to the agricultural-chemicals coating agent manufactured as mentioned above is provided. For example, in using an agricultural-chemicals coating agent as wettable powder. What is necessary is to dissolve the above-mentioned sizing agent and just to sprinkle the above-mentioned agricultural-chemicals coating agent to the wettable powder prepared so that it might become the concentration about 100 - 1000 ppm, so that it may become a rate of 0.01 to 10 weight section to agrochemical active ingredient 100 weight section. Although not necessarily adhered to theory, if it sprinkles by the method of this invention, the agrochemical active ingredient contained in a sizing agent and an agricultural-chemicals coating agent will dissolve in water promptly, but. Since the coating layer of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid does not dissolve in water, a high-concentration agricultural-chemicals solution is held in the capsule formed with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid. On the other hand, since the outside of this capsule contacts the sizing agent which dissolved, this capsule containing a high-concentration agricultural-chemicals solution adheres to a disease germ or a noxious insect easily, and demonstrates sterilization and the insect-killing effect continuously. Also when adding and sprinkling water to the sterilization insect-killing constituent of this invention, low concentration also demonstrates sterilization and the insect-killing effect

continuously by the same mechanism of action.

0011

Working example Although an embodiment explains this invention still more concretely below, this invention is not limited to these.

2 g of embodiment 1 diglycerol laurate was dissolved in acetone 100 ml. After adding impalpable powder 100 g (100 90% of mesh passage) of sodium bicarbonate in this solution and stirring in it, the revolving evaporator was used, the solvent was distilled off thoroughly and it powdered. Addition mixing of 0.05 g of the carboxymethyl cellulose (CMC) was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

The embodiment 2 glycerin mono- KAPURI rate of 4 g was dissolved in acetone 100 ml. After adding impalpable powder 100 g (100 90% of mesh passage) of sodium bicarbonate in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.02 g of the carboxymethyl cellulose (CMC) was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

00122g of embodiment 3 glycerine monolaurate and 2 g of sorbitan stearate were dissolved in ethanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of sodium chloride in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. As a sizing agent, carboxymethyl cellulose (CMC) 0.1 g was added to this powder, and it mixed to it, and was considered as fluid good powder water soluble powders.

An embodiment 4 glycerin mono- KAPURI rate of 2g and 2 g of diglycerol laurate were dissolved in methanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of potassium bicarbonate in this solution and stirring in it, a solvent was thoroughly distilled off using a revolving evaporator and it powdered. Addition mixing of the sodium polyacrylate 0.05g was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

4 g of embodiment 5 glycerine monolaurate and 2 g of diglycerol olate were dissolved in 10 ml of acetone, and 5 ml of methanol, respectively. After having dried under a hot wind, having added a solution of diglycerol olate further, after adding impalpable powder 100 g (90% of 100-mesh passage) of potassium carbonate in a solution of glycerine monolaurate and stirring in it, and stirring, a solvent was thoroughly removed under a hot wind and it powdered. Addition mixing of the sodium polyacrylate 0.08g was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

00132 g of embodiment 6 glycerin mono- olate and 2 g of diglycerol olate were dissolved in 50 ml of acetone, and 50 ml of methanol, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of ammonium acid carbonate in a solution of glycerin mono- olate and stirring in it, After having distilled off a solvent thoroughly using a revolving evaporator, adding a solution of diglycerol olate further and stirring, a solvent was thoroughly removed under a hot wind and it powdered. Addition mixing of the sodium alginate 0.05g was carried out as a sizing agent, and it was made this powder with fluid good powder wettable powder.

4 g of embodiment 7 glycerin laurate was dissolved in 100 ml of methanol. After adding the impalpable powder 80g (90% of 100-mesh passage) of ammonium carbonate to this and stirring to it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.05 g of the alginic acid was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

2 g of embodiment 8 diglycerol olate and 2 g of hexaglycerin laurate were dissolved in 50 ml of acetone, and 50 ml of methanol, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of calcium carbonate in the solution of diglycerol olate and stirring in it, After having distilled off the solvent thoroughly using the revolving evaporator, adding the solution of hexaglycerin laurate further and stirring, the solvent was thoroughly distilled off by the revolving evaporator and it powdered. Addition mixing of 0.05 g of the Pirro sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

00142 g of embodiment 9 diglycerol laurate and 2 g of decaglycerin laurate were dissolved in 50 ml of ethanol, and 50 ml of acetone, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid disodium to the former and stirring to it, After having distilled off the solvent thoroughly using the revolving evaporator, adding the solution of decaglycerin laurate further and stirring, the solvent was thoroughly distilled off by the revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate

was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
4g of embodiment 10 propylene-glycol mono- laurate and 2 g of sorbitan laurate were dissolved in ethanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid 1 sodium in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
2 g of embodiment 11 diglycerol laurate and 2 g of decaglycerin laurate were dissolved in 50 ml of ethanol, and 50 ml of acetone, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid dipotassium in the solution of diglycerol laurate and stirring in it, After having distilled off the solvent thoroughly using the revolving evaporator, adding the solution of decaglycerin laurate further and stirring, the solvent was thoroughly distilled off by the revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
00154g of embodiment 12 propylene-glycol mono- laurate and 2 g of sorbitan laurate were dissolved in ethanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid 1 potassium in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
4 g of embodiment 13 glycerin mono- olate was dissolved in 100 ml of acetone. After adding impalpable powder 100 g (90% of 100-mesh passage) of anhydrous copper sulfate to this and stirring to it, a solvent was thoroughly distilled off using a revolving evaporator and it powdered. Addition mixing of 0.05 g of the alginic acid was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
An effect of a sterilization insect-killing constituent of one to example of examination 13 this invention was compared with a publicly known agricultural-chemicals coating agent (thing given in JP,H1-151501,A), and conventional drugs solution. While preparing pharmaceutical preparation with a concentration of 250 ppm and 125 ppm and computing preventive value (%) on the 6th and the 10th about each drugs on the 3rd, it compared by observing existence of a medical harm. Preventive value about pharmaceutical preparation with a concentration of 125 ppm was shown in (), and since the effect same about a medical harm as 250 ppm pharmaceutical preparation was acquired, it indicated collectively. An effect when pharmaceutical preparation which does not contain drugs was sprinkled was written in a column of contrast for comparison.
0016 From a result shown in Table 1, a sterilization insect-killing constituent of this invention compares with conventional drugs solution or a publicly known agricultural-chemicals coating agent, Since preventive value is improving remarkably also in low concentration (125 ppm and 250 ppm) and remarkable preventive value will be shown also on the 10th for the 6th day, excelling in durability is clear.

Table 1

Cucumber Japanese noodles **** curative effect ---------- ---------- concentration A curative effect (%)
Sample offering drug additive (ppm). ----------. A medical harm 3 day 6 day 10 day. ---------- ----------. $NaHCO_3$ coating agent / CMC. 250 (125) 95 (87) 93 (85) Example of 93 (80)-less examination-1 $NaHCO_3$ coating agent 90 (55) 85 (51) 80 (48) "(embodiment-1) $NaHCO_3$30 (20) 27(17) 20(10)." ----------. A Na_2CO_3 coating agent / CMC. 90 (48) 86 (45) 85 (45) Example-of " examination 2 Na_2CO_3 coating agent 89(48) 84 (46) 45 (27) "(embodiment-2) $Na_2CO_3$14 (5) 12 (0) 5 (0) ". a ---------- ---------- NaCl coating agent / CMC -- 85 (50) -- "example of examination-3 NaCl coating agent 90 (45) 85(41) 41(18)" (.) 80 (45) 65 (27) Embodiment-3 NaCl 10(0) 9 (0) 5 (0) ". ---------- ----------. $KHCO_3$ coating agent / sodium-polyacrylate 250 (125) 96 (89) 93 (87) 91 (87) " -- example of examination-4 $KHCO_3$ coating agent 98 (58) 92 (57) 57 (50). "(embodiment-4) $KHCO_3$12 (10) 10(5)5(0)." ----------. K_2CO_3 coating agent /. Sodium-polyacrylate 80 (45) 79 (40) 79 (40) Example-of " examination 5 K_2CO_3 coating agent 91(45)

88 (42) 42 (20) "(embodiment-5) $K_2CO_3$10 (5) 10 (5) 5 (0) ". ---------- ---------- (NH_4) HCO_3 coating " -- example of examination-6 HCO(NH_4) An agent / alginic acid 250 (125) 93 (70) 91 (66) 90 (66) $_3$ coating agent 83 (64) 80 (53) 53 (40) "(embodiment-6) $HCO_3$12 (5) 9(0) 0(0) (NH_4)." ----------. (NH_4) $_2CO_3$ coating agent . the /alginic acid 88 (66) 86 (61). 85 (62) Example-of " examination 7 $_{(NH_4)2}CO_3$ coating agent 86(52) 82 (51) 51 (35) "(embodiment-7) $_{(NH_4)2}CO_3$9 (0) 7 (0) 0 (0) ". ----------. a $CaCO_3$ coating agent -- / Pirro sodium phosphate 250 (125) 86 (50) 85 (48) 81 (48) " -- example of examination-8 $CaCO_3$ coating agent 87 (50) 81 (47) 47 (27). "(embodiment-8) $CaCO_3$7 (0) 5(0) 0(0)" ---------- ---------- Na_2HPO_4 coating agent /. Poly sodium phosphate 250 (125). 90 (80) 88 (71) 87 (70) Example-of " examination 9 Na_2HPO_4 coating agent 90(51) 81 (50) 50 (25) "(embodiment-9) $Na_2HPO_4$14 (6) 10 (3) 5 (0) ". ----------. NaH_2PO_4 coating agent . / -- poly sodium phosphate 86 (50). 82 (44) 83 (44) Example-of " examination 10 NaH_2PO_4 coating agent 100(50) 93 (46) 46 (18) "(embodiment-10) $NaH_2PO_4$5 (0) 0 (0) 0 (0) ". ----------. K_2HPO_4 coating agent . / Poly sodium phosphate 250 (125). 79 (44) 75 (40) 75 (40) Example-of " examination 11 K_2HPO_4 coating agent 94(51) 93 (49) 49 (20) "(embodiment-11) $K_2HPO_4$6 (0) 5 (0) 3 (0) "----. ---------- ----------. KH_2PO_4 coating agent . / -- poly sodium phosphate 83 (55). 80 (51) 80 (51) Example-of " examination 12 KH_2PO_4 coating agent 90(48) 89 (46) 46 (20) "(embodiment-12) $KH_2PO_4$11 (5) 7 (0) 3 (0) ". ----------. A $CuSO_4$ coating agent / alginic acid . 95 (77) 95 (70) 92 (70) Example-of " examination 13 $CuSO_4$ coating agent 90(75) 88 (70) 52 (34) "(embodiment-13) $CuSO_4$19 (15) 17 (13) 15 (13) ". ---------- ---------- -- Check (water) 0 0 0 ----------**0017**A curative effect by sterilization insect-killing constituent water soluble powders of this invention with which kinds of example of examination 14 sizing agent differ was examined. While adjusting pharmaceutical preparation with a concentration of 250 ppm and 125 ppm and computing preventive value (%) on the 6th and the 10th on the 3rd, it compared by observing existence of a medical harm. Preventive value about pharmaceutical preparation with a concentration of 125 ppm was shown in (), and since the effect same about a medical harm as 250 ppm pharmaceutical preparation was acquired, it indicated collectively. Sterilization insect-killing constituent solution of this invention had an effective curative effect and durability irrespective of a kind of sizing agent. A result is shown in Table 2.

0018

Table 2

Cucumber Japanese noodles **** curative effect ---------- ---------- concentration Therapy value (%)

Sample offering drug additive (ppm). ----------. Medical harm 3 day 6 day 10 day. ---------- ----------. $NaHCO_3$ coating / CMC. 250 (125) 96 (85) 96 (85). 94(83)-less / alginic acid 250 (125). 95 (85) 94 (85) 94 (82). " -- /casein ""90 (81) 90 (82). 90 (80) " / sodium-polyacrylate . ""95 (87) 95 (86) 95 (86). " -- /Pirro sodium phosphate ""94 (82) -- 93 (80). 93 (79) " / poly sodium phosphate . ""93 (80) 91 (80) 91 (77) "/meta-sodium phosphate ""80(70) 80 (69) 77 (65) "$NaHCO_3$ coating - "" 64 (51) 87 (62) 50 (49) ". ----------

-**0019**When $NaHCO_3$ is used as solution to an example of examination 15 citrus sunspot disease (**-**), When an agricultural-chemicals coating agent given in JP,H1-151501,A was diluted and used (**-**), comparison of preventive value when the sterilization insect-killing constituent of this invention is diluted and used (O-O) was shown in drawing 1. When drug concentration is changed to 0-300 ppm, in conventional solution, preventive value is about 5% also in 300 ppm, As for the sterilization insect-killing constituent of this invention, the agricultural-chemicals coating agent given in a JP,1-15150,A . item gazette also showed the preventive value which exceeds 80% at 125 ppm to the preventive value in the concentration of 250 ppm having been about 60%. It is clear that the sterilization insect-killing constituent of this invention acts effectively far also low concentration compared with other two persons. When $KHCO_3$ is used as solution to an example of examination 16 petunia gray mold disease (**-**), When an agricultural-chemicals coating agent given in JP,H1-151501,A was diluted

and used (**-**), comparison of preventive value when the sterilization insect-killing constituent of this invention is diluted and used (O-O) was shown in drawing 2. It is clear that the sterilization insect-killing constituent of this invention is acting effectively far also low concentration compared with other two persons.

0020 The insect-killing effect of the sterilization insect-killing constituent solution of example of examination 17 this invention was compared with the insect-killing effect of a publicly known agricultural-chemicals coating agent (thing of JP,H1-151501,A), and conventional drugs solution. About each drugs, pharmaceutical preparation with a concentration of 250 ppm and 125 ppm was adjusted, and it compared by computing the rate of insect killing of a green peach aphid (%), and the rate of ** ticks of a SHIMIKAN spider mite (%). - showed what does not have **that / effective** ++ and an effect about the depressor effect of an ISERIYA scale insect in what has larger + and effect. The concentration of 125 ppm was shown in (). Compared with conventional drugs solution or publicly known agricultural-chemicals coating agent, it is clear that solution's of the sterilization insect-killing constituent of this invention the insect-killing effect is high. About the rate of insect killing to a green peach aphid, the sterilization insect-killing constituent of Embodiments 1-13, About the rate of ** ticks to a citrus red mite, it is clear that the sterilization insect-killing constituent of Embodiments 1, 4, 6, 8, 10, and 11 is excellent in the sterilization insect-killing constituent of Embodiments 1, 4, 6, 11, and 13 again compared with other drugs about the depressor effect over an ISERIYA scale insect. A result is shown in Table 3.

0021

Table 3

An insecticidal/acaricidal effect. ----------. Concentration MOMOAKA Citrus red mite ISERIYAKA Sample offering drugs (ppm) Aphid Rate of ** ticks IGARAMUSHI Rate of insect killing (%) (%) depressor effect. ---------- ---------- $NaHCO_3$ coating An agent / CMC 250 (125) 90 (55) 97 (62) ++ (++)
embodiment $NaHCO_3$ coating agent 75 (31) 88 (46) + (-)
1 $NaHCO_3$20 (0) 27 (10) - (-)
----------. Na_2CO_3 coating an agent/CMC -- 98 (51) Na_2CO_3 coating agent 58 (23) 2 $Na_2CO_3$10 (0). ----------. NaCl coating an agent/CMC -- 83 (40) NaCl coating agent 55 (26) 3 NaCl 17 (10). ---------- ---------- $KHCO_3$ coating An agent / polyacrylic acid 100 (88) 98 (84) ++ (++)
Soda $KHCO_3$ coating agent 89 (52) 95 (61) ++ (+)
4 $KHCO_3$20 (15) 50 (20) - (-)
----------. K_2CO_3 coating Agent / polyacrylic acid 96 (50) soda K_2CO_3 coating agent 80 (31) 5 $K_2CO_3$27 (11). ---------- ---------- $(NH_4)HCO_3$ coating An agent / alginic acid 90 (44) 97 (73) ++ (++)
$(NH_4)HCO_3$ coating agent 81 (25) 88 (48) ++ (+)
6 $(NH_4)HCO_3$20 (11) 20 (7) - (-)
----------. $(NH_4)_2CO_3$ coating An agent / alginic acid 94 (59) $_{(NH_4)2}CO_3$ coating agent 79 (48) 7 $_{(NH_4)2}CO_3$10 (0). ----------. $CaCO_3$ coating agent/-- Pirro sodium phosphate 72 (40) 90 (71) $CaCO_3$ coating agent 30 (18) 83 (40) 8 $CaCO_3$0 (0) 21 (7). ----------. Na_2HPO_4 coating agent / poly sodium phosphate 97(62) Na_2HPO_4 coating agent 77 (35) 9 $Na_2HPO_4$10 (0). ---------- ---------- ------ NaH_2PO_4 coating agent / poly sodium phosphate 91(72) 93 (87) NaH_2PO_4 coating agent . 70 (33) 76 (42) 10 $NaH_2PO_4$11 (0) 22(7) ---------- ---------- K_2HPO_4 coating agent / casein 95(66) 92 (80) ++ (++)
K_2HPO_4 coating agent 77 (37) 75 (32) + (-)
11 $K_2HPO_4$12 (7) 20 (11) - (-)
----------. KH_2PO_4 coating agent / casein 93(71) KH_2PO_4 coating agent 68 (38) 12 $KH_2PO_4$15 (10). ---------- ---------- $CuSO_4$ coating agent / casein 250 (125) 100 (65) ++ (++)
$CuSO_4$ coating agent 80 (32) ++ (-)

13 $CuSO_4$36 (12) - (-)

----------. Check0 (water) 0 - green peach aphid . Myzus persicae English name greem. peach aphid citrus red mite Panonychus citriNc Gregor **** Citrus red mite ISERIYA scale insect Icerya purchstMaskell **** Cottonycushion scale **Effect of the Invention**Since the sterilization insect-killing constituent of this invention demonstrates an effect continuously compared with the conventional drugs even if it is low concentration, it is useful.

Industrial Application About a sterilization insect-killing constituent, this invention still more specifically relates to the sterilization insect-killing constituent which has a continuous extermination effect, also when an agrochemical active ingredient is low concentration.

Description of the Prior Art Conventionally, as agrochemical preparation, heavy metal compounds, such as mercurial and an arsenical, an organochlorine chemical, and organic phosphoric acid system drugs have been used widely. However, each of these drugs is harmful to a human body or an animal, and when an effective dose is used, it is a serious social problem to cause environmental pollution, such as soil pollution. For this reason, the high extermination effect was shown and development of agricultural chemicals with high safety has been furthered to a human body or animals and plants. The germicide which uses aliphatic-polyhydric-alcohol aliphatic series ester and sodium bicarbonate as the main ingredients is indicated by JP,S57-48525,B. This germicide has a high extermination effect in this publication to various kinds of plant disease and fruits storage diseases, and it is taught to it to a human body or animals and plants that safety is high. However, when using it with an application amount comparable as the conventional agricultural chemicals, if this germicide was not used at high concentration, it was not able to acquire an effective extermination effect. When concentration was made low, there was a problem that this germicide had to be used so much.

0002 In order to solve such a problem, the agricultural-chemicals coating agent which coated agrochemical active ingredient powder 100 weight section with 0.1 to one-sort or two or more sort 3 weight section of aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid is proposed (JP,H1-151501,A). Although this agricultural-chemicals coating agent acted effectively also low concentration, from a viewpoint of the durability of an extermination effect, it was not satisfactory, and there was a problem whose illness of what can acquire an effective extermination effect reaches an advanced stage that it will be alike, therefore preventive value will fall in the time of spraying.

Effect of the Invention Since the sterilization insect-killing constituent of this invention demonstrates an effect continuously compared with the conventional drugs even if it is low concentration, it is useful.

Working example Although an embodiment explains this invention still more concretely below, this invention is not limited to these.

2 g of embodiment 1 diglycerol laurate was dissolved in acetone 100 ml. After adding impalpable powder 100 g (100 90% of mesh passage) of sodium bicarbonate in this solution and stirring in it, the revolving evaporator was used, the solvent was distilled off thoroughly and it powdered. Addition mixing of 0.05 g of the carboxymethyl cellulose (CMC) was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

The embodiment 2 glycerin mono- KAPURI rate of 4 g was dissolved in acetone 100 ml. After adding impalpable powder 100 g (100 90% of mesh passage) of sodium bicarbonate in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.02 g of the carboxymethyl cellulose (CMC) was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.

00122g of embodiment 3 glycerine monolaurate and 2 g of sorbitan stearate were dissolved in ethanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of sodium chloride in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. As a sizing agent, carboxymethyl cellulose (CMC) 0.1 g was added to this powder, and it mixed to it, and was considered as fluid good powder water soluble powders.
An embodiment 4 glycerin mono- KAPURI rate of 2g and 2 g of diglycerol laurate were dissolved in methanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of potassium bicarbonate in this solution and stirring in it, a solvent was thoroughly distilled off using a revolving evaporator and it powdered. Addition mixing of the sodium polyacrylate 0.05g was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
4 g of embodiment 5 glycerine monolaurate and 2 g of diglycerol olate were dissolved in 10 ml of acetone, and 5 ml of methanol, respectively. After having dried under a hot wind, having added a solution of diglycerol olate further, after adding impalpable powder 100 g (90% of 100-mesh passage) of potassium carbonate in a solution of glycerine monolaurate and stirring in it, and stirring, a solvent was thoroughly removed under a hot wind and it powdered. Addition mixing of the sodium polyacrylate 0.08g was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
00132 g of embodiment 6 glycerin mono- olate and 2 g of diglycerol olate were dissolved in 50 ml of acetone, and 50 ml of methanol, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of ammonium acid carbonate in a solution of glycerin mono- olate and stirring in it, After having distilled off a solvent thoroughly using a revolving evaporator, adding a solution of diglycerol olate further and stirring, a solvent was thoroughly removed under a hot wind and it powdered. Addition mixing of the sodium alginate 0.05g was carried out as a sizing agent, and it was made this powder with fluid good powder wettable powder.
4 g of embodiment 7 glycerin laurate was dissolved in 100 ml of methanol. After adding the impalpable powder 80g (90% of 100-mesh passage) of ammonium carbonate to this and stirring to it, a solvent was thoroughly distilled off using a revolving evaporator and it powdered. Addition mixing of 0.05 g of the alginic acid was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
2 g of embodiment 8 diglycerol olate and 2 g of hexaglycerin laurate were dissolved in 50 ml of acetone, and 50 ml of methanol, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of calcium carbonate in a solution of diglycerol olate and stirring in it, After having distilled off a solvent thoroughly using a revolving evaporator, adding a solution of hexaglycerin laurate further and stirring, a solvent was thoroughly distilled off by a revolving evaporator and it powdered. Addition mixing of 0.05 g of the Pirro sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
00142 g of embodiment 9 diglycerol laurate and 2 g of decaglycerin laurate were dissolved in 50 ml of ethanol, and 50 ml of acetone, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid disodium to the former and stirring to it, After having distilled off a solvent thoroughly using a revolving evaporator, adding a solution of decaglycerin laurate further and stirring, a solvent was thoroughly distilled off by a revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
4g of embodiment 10 propylene-glycol mono- laurate and 2 g of sorbitan laurate were dissolved in ethanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid 1 sodium in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
2 g of embodiment 11 diglycerol laurate and 2 g of decaglycerin laurate were dissolved in 50 ml of ethanol, and 50 ml of acetone, respectively. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid dipotassium in the solution of diglycerol laurate and stirring in it, After having distilled off the solvent thoroughly using the revolving evaporator, adding the solution of decaglycerin laurate further and stirring, the solvent was thoroughly distilled off by the revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid

good powder water soluble powders.
00154g of embodiment 12 propylene-glycol mono- laurate and 2 g of sorbitan laurate were dissolved in ethanol 100 ml. After adding impalpable powder 100 g (90% of 100-mesh passage) of phosphoric acid 1 potassium in this solution and stirring in it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.05 g of the poly sodium phosphate was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
4 g of embodiment 13 glycerin mono- olate was dissolved in 100 ml of acetone. After adding impalpable powder 100 g (90% of 100-mesh passage) of anhydrous copper sulfate to this and stirring to it, the solvent was thoroughly distilled off using the revolving evaporator and it powdered. Addition mixing of 0.05 g of the alginic acid was carried out as a sizing agent, and it was made this powder with fluid good powder water soluble powders.
The effect of the sterilization insect-killing constituent of one to example of examination 13 this invention was compared with a publicly known agricultural-chemicals coating agent (thing given in JP,H1-151501,A), and conventional drugs solution. While preparing pharmaceutical preparation with a concentration of 250 ppm and 125 ppm and computing the preventive value (%) on the 6th and the 10th about each drugs on the 3rd, it compared by observing the existence of a medical harm. The preventive value about pharmaceutical preparation with a concentration of 125 ppm was shown in (), and since the effect same about a medical harm as 250 ppm pharmaceutical preparation was acquired, it indicated collectively. The effect when the pharmaceutical preparation which does not contain drugs was sprinkled was written in the column of the contrast for comparison.
0016 From the result shown in Table 1, the sterilization insect-killing constituent of this invention compares with conventional drugs solution or publicly known agricultural-chemicals coating agent, Since preventive value is improving remarkably also in low concentration (125 ppm and 250 ppm) and remarkable preventive value will be shown also on the 10th for the 6th day, excelling in durability is clear.
Table 1
Cucumber Japanese noodles **** curative effect ---------- ---------- concentration A curative effect (%)
Sample offering drug additive (ppm). ----------. A medical harm 3 day 6 day 10 day. ---------- ----------. $NaHCO_3$ coating agent / CMC. 250 (125) 95 (87) 93 (85) Example of 93 (80)-less examination-1 $NaHCO_3$ coating agent 90 (55) 85 (51) 80 (48) "(embodiment-1) $NaHCO_3$30 (20) 27(17) 20(10)." ----------. A Na_2CO_3 coating agent / CMC. 90 (48) 86 (45) 85 (45) Example-of " examination 2 Na_2CO_3 coating agent 89(48) 84 (46) 45 (27) "(embodiment-2) $Na_2CO_3$14 (5) 12 (0) 5 (0) ". a ---------- ---------- NaCl coating agent / CMC -- 85 (50) -- "example of examination-3 NaCl coating agent 90 (45) 85(41) 41(18)" (.) 80 (45) 65 (27) Embodiment-3 NaCl 10(0) 9 (0) 5 (0) ". ---------- ----------. $KHCO_3$ coating agent / sodium-polyacrylate 250 (125) 96 (89) 93 (87) 91 (87) " -- example of examination-4 $KHCO_3$ coating agent 98 (58) 92 (57) 57 (50). "(embodiment-4) $KHCO_3$12 (10) 10(5)5(0)." ----------. K_2CO_3 coating agent /. Sodium-polyacrylate 80 (45) 79 (40) 79 (40) Example-of " examination 5 K_2CO_3 coating agent 91(45) 88 (42) 42 (20) "(embodiment-5) $K_2CO_3$10 (5) 10 (5) 5 (0) ". ---------- ---------- (NH_4) HCO_3 coating " -- example of examination-6 $HCO(NH_4)$ An agent / alginic acid 250 (125) 93 (70) 91 (66) 90 (66) $_3$ coating agent 83 (64) 80 (53) 53 (40) "(embodiment-6) $HCO_3$12 (5) 9(0) 0(0) (NH_4)." ----------. (NH_4) $_2CO_3$ coating agent . the /alginic acid 88 (66) 86 (61). 85 (62) Example-of " examination 7 $_{(NH_4)2}CO_3$ coating agent 86(52) 82 (51) 51 (35) "(embodiment-7) $_{(NH_4)2}CO_3$9 (0) 7 (0) 0 (0) ". ----------. a $CaCO_3$ coating agent -- / Pirro sodium phosphate 250 (125) 86 (50) 85 (48) 81 (48) " -- example of examination-8 $CaCO_3$ coating agent 87 (50) 81 (47) 47 (27). "(embodiment-8) $CaCO_3$7 (0) 5(0) 0(0)" ---------- ---------- Na_2HPO_4 coating agent /. Poly sodium phosphate 250 (125). 90 (80) 88 (71) 87 (70) Example-of " examination 9 Na_2HPO_4 coating agent 90(51) 81 (50) 50 (25) "(embodiment-9) $Na_2HPO_4$14 (6) 10 (3) 5 (0) ". ----------. NaH_2PO_4 coating agent . / -- poly sodium phosphate 86 (50). 82 (44) 83 (44) Example-of "

examination 10 NaH_2PO_4 coating agent 100(50) 93 (46) 46 (18) "(embodiment-10) $NaH_2PO_4$5 (0) 0 (0) 0 (0) ". ----------. K_2HPO_4 coating agent . / Poly sodium phosphate 250 (125). 79 (44) 75 (40) 75 (40) Example-of " examination 11 K_2HPO_4 coating agent 94(51) 93 (49) 49 (20) "(embodiment-11) $K_2HPO_4$6 (0) 5 (0) 3 (0) "----. ----------. KH_2PO_4 coating agent . / -- poly sodium phosphate 83 (55). 80 (51) 80 (51) Example-of " examination 12 KH_2PO_4 coating agent 90(48) 89 (46) 46 (20) "(embodiment-12) $KH_2PO_4$11 (5) 7 (0) 3 (0) ". ----------. A $CuSO_4$ coating agent / alginic acid . 95 (77) 95 (70) 92 (70) Example-of " examination 13 $CuSO_4$ coating agent 90(75) 88 (70) 52 (34) "(embodiment-13) $CuSO_4$19 (15) 17 (13) 15 (13) ". ---------- ---------- -- Check (water) 0 0 0 ----------**0017**A curative effect by sterilization insect-killing constituent water soluble powders of this invention with which kinds of example of examination 14 sizing agent differ was examined. While adjusting pharmaceutical preparation with a concentration of 250 ppm and 125 ppm and computing preventive value (%) on the 6th and the 10th on the 3rd, it compared by observing existence of a medical harm. Preventive value about pharmaceutical preparation with a concentration of 125 ppm was shown in (), and since the effect same about a medical harm as 250 ppm pharmaceutical preparation was acquired, it indicated collectively. Sterilization insect-killing constituent solution of this invention had an effective curative effect and durability irrespective of a kind of sizing agent. A result is shown in Table 2.

0018

Table 2

Cucumber Japanese noodles **** curative effect ---------- ---------- concentration Therapy value (%)

Sample offering drug additive (ppm). ----------. Medical harm 3 day 6 day 10 day. ----------. $NaHCO_3$ coating / CMC. 250 (125) 96 (85) 96 (85). 94(83)-less / alginic acid 250 (125). 95 (85) 94 (85) 94 (82). " -- /casein ""90 (81) 90 (82). 90 (80) " / sodium-polyacrylate . ""95 (87) 95 (86) 95 (86). " -- /Pirro sodium phosphate ""94 (82) -- 93 (80). 93 (79) " / poly sodium phosphate . ""93 (80) 91 (80) 91 (77) "/meta-sodium phosphate ""80(70) 80 (69) 77 (65) "$NaHCO_3$ coating - "" 64 (51) 87 (62) 50 (49) ". ----------

-**0019**When $NaHCO_3$ is used as solution to an example of examination 15 citrus sunspot disease (**-**), When an agricultural-chemicals coating agent given in JP,H1-151501,A was diluted and used (**-**), comparison of preventive value when the sterilization insect-killing constituent of this invention is diluted and used (O-O) was shown in drawing 1. When drug concentration is changed to 0-300 ppm, in conventional solution, preventive value is about 5% also in 300 ppm, As for the sterilization insect-killing constituent of this invention, the agricultural-chemicals coating agent given in a JP,1-15150,A . item gazette also showed the preventive value which exceeds 80% at 125 ppm to the preventive value in the concentration of 250 ppm having been about 60%. It is clear that the sterilization insect-killing constituent of this invention acts effectively far also low concentration compared with other two persons. When $KHCO_3$ is used as solution to an example of examination 16 petunia gray mold disease (**-**), When an agricultural-chemicals coating agent given in JP,H1-151501,A was diluted and used (**-**), comparison of preventive value when the sterilization insect-killing constituent of this invention is diluted and used (O-O) was shown in drawing 2. It is clear that the sterilization insect-killing constituent of this invention is acting effectively far also low concentration compared with other two persons.

0020 The insect-killing effect of the sterilization insect-killing constituent solution of example of examination 17 this invention was compared with the insect-killing effect of a publicly known agricultural-chemicals coating agent (thing of JP,H1-151501,A), and conventional drugs solution. About each drugs, pharmaceutical preparation with a concentration of 250 ppm and 125 ppm was adjusted, and it compared by computing the rate of insect killing of a green peach aphid (%), and the rate of ** ticks of a SHIMIKAN spider mite (%). - showed what does not have **that / effective** ++ and an effect about the depressor effect of an ISERIYA scale insect in what has larger + and effect. The concentration of 125 ppm was shown in (). Compared with conventional drugs solution or publicly known agricultural-chemicals coating agent, it is clear that solution's of the sterilization insect-killing constituent of this invention the insect-killing effect is high. About the rate of insect killing to a green peach aphid, the sterilization insect-

killing constituent of Embodiments 1-13, About the rate of ** ticks to a citrus red mite, it is clear that the sterilization insect-killing constituent of Embodiments 1, 4, 6, 8, 10, and 11 is excellent in the sterilization insect-killing constituent of Embodiments 1, 4, 6, 11, and 13 again compared with other drugs about the depressor effect over an ISERIYA scale insect. A result is shown in Table 3.

0021

Table 3

An insecticidal/acaricidal effect. ----------. Concentration MOMOAKA Citrus red mite ISERIYAKA Sample offering drugs (ppm) Aphid Rate of ** ticks IGARAMUSHI Rate of insect killing (%) (%) depressor effect. ---------- ---------- $NaHCO_3$ coating An agent / CMC 250 (125) 90 (55) 97 (62) ++ (++)
embodiment $NaHCO_3$ coating agent 75 (31) 88 (46) + (-)
1 $NaHCO_3$20 (0) 27 (10) - (-)
----------. Na_2CO_3 coating an agent/CMC -- 98 (51) Na_2CO_3 coating agent 58 (23) 2 $Na_2CO_3$10 (0). ----------. NaCl coating an agent/CMC -- 83 (40) NaCl coating agent 55 (26) 3 NaCl 17 (10). ---------- ---------- $KHCO_3$ coating An agent / polyacrylic acid 100 (88) 98 (84) ++ (++)
Soda $KHCO_3$ coating agent 89 (52) 95 (61) ++ (+)
4 $KHCO_3$20 (15) 50 (20) - (-)
----------. K_2CO_3 coating Agent / polyacrylic acid 96 (50) soda K_2CO_3 coating agent 80 (31) 5 $K_2CO_3$27 (11). ---------- ---------- $(NH_4)HCO_3$ coating An agent / alginic acid 90 (44) 97 (73) ++ (++)
$(NH_4)HCO_3$ coating agent 81 (25) 88 (48) ++ (+)
6 $(NH_4)HCO_3$20 (11) 20 (7) - (-)
----------. $(NH_4)_2CO_3$ coating An agent / alginic acid 94 (59) $_{(NH_4)2}CO_3$ coating agent 79 (48) 7 $_{(NH_4)2}CO_3$10 (0). ----------. $CaCO_3$ coating agent/-- Pirro sodium phosphate 72 (40) 90 (71) $CaCO_3$ coating agent 30 (18) 83 (40) 8 $CaCO_3$0 (0) 21 (7). ----------. Na_2HPO_4 coating agent / poly sodium phosphate 97(62) Na_2HPO_4 coating agent 77 (35) 9 $Na_2HPO_4$10 (0). ---------- ---------- NaH_2PO_4 coating agent / poly sodium phosphate 91(72) 93 (87) NaH_2PO_4 coating agent . 70 (33) 76 (42) 10 $NaH_2PO_4$11 (0) 22(7) ---------- ---------- K_2HPO_4 coating agent / casein 95(66) 92 (80) ++ (++)
K_2HPO_4 coating agent 77 (37) 75 (32) + (-)
11 $K_2HPO_4$12 (7) 20 (11) - (-)
----------. KH_2PO_4 coating agent / casein 93(71) KH_2PO_4 coating agent 68 (38) 12 $KH_2PO_4$15 (10). ---------- ---------- $CuSO_4$ coating agent / casein 250 (125) 100 (65) ++ (++)
$CuSO_4$ coating agent 80 (32) ++ (-)
13 $CuSO_4$36 (12) - (-)
----------. Check0 (water) 0 - green peach aphid . Myzus persicae English name greem. peach aphid citrus red mite Panonychus citriNc Gregor **** Citrus red mite ISERIYA scale insect Icerya purchstMaskell **** Cottonycushion scale

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Problem to be solved by the invention Therefore, an object of this invention is to provide the sterilization insect-killing constituent which can demonstrate an extermination effect continuously also in low concentration compared with the conventional agricultural-chemicals coating agent.

Means for solving problem As a result of trying hard wholeheartedly that above-mentioned

SUBJECT should be solved, this invention person besides the agricultural-chemicals coating agent which coated the agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, The sterilization insect-killing constituent containing a small amount of sizing agents finds out that an extermination effect can be continuously demonstrated also in low concentration, and came to complete this invention. That is, this invention provides the sterilization insect-killing constituent containing the agricultural-chemicals coating agent which coated the agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, and the sizing agent of 0.01 to 10 weight section.

0004 The agricultural-chemicals coating agent contained in the sterilization insect-killing constituent of this invention, It is the agricultural-chemicals coating agent which coated the agrochemical active ingredient of 100 weight sections with aliphatic-polyhydric-alcohol fatty acid ester and/or phospholipid of 0.1 to 10 weight section, As an agrochemical active ingredient contained in this agricultural-chemicals coating agent that can be manufactured by a publicly known method, for example, the method indicated to JP,H1-151501,A, what serves as solid powder at ordinary temperature may be preferred, for example, any, such as various germicides for agriculture and horticulture, an insecticide, and a weed killer, may be sufficient as it. Although the agricultural chemicals of nonaqueous solubility may be used, a water-soluble thing can be used conveniently. As an example of such an agrochemical active ingredient, a copper 8 hydroxyquinolinolate, Basic copper sulfate, copper oxychloride, a cupric chloride, basic copper carbonate, a methyl 1-(butylcarbamoyl)-2-benzimidazole carbamate, The usual agrochemical components, such as an antibiotic polyoxin complex, O,O-diethyl- S-benzylthio phosphate, a 2-sec-buthylphenyl N-methyl carbamate, and O,O-dimethyl- 2,2,2-trichloro-1-hydroxyethyl phosphate, can be mentioned. In addition to these, water-soluble carbonate with high safety, water-soluble bicarbonate, a water-soluble chloride, a water-soluble phosphate, and water-soluble sulfate can be used to animals and plants. For example, water-soluble carbonate of potassium carbonate, sodium carbonate, ammonium carbonate, etc.; Potassium bicarbonate, Water-soluble bicarbonate of sodium bicarbonate, ammonium bicarbonate, etc.; Potassium chloride, The water-soluble chloride of sodium chloride, a magnesium chloride, etc.; water-soluble sulfate of water-soluble phosphate; of disodium hydrogenphosphate, a sodium dihydrogenphosphate, potassium dihydrogen phosphate, etc., copper sulfate, etc. can be used. Although these agrochemical active ingredients may be used alone, it may be used combining two or more sorts.

0005 As aliphatic polyhydric alcohol which constitutes the aliphatic-polyhydric-alcohol fatty acid ester contained in this agricultural-chemicals coating agent, although aliphatic polyhydric alcohol of saturation with 3-6 carbon atoms or an unsaturation can be used, For example, glycerin, propylene glycol, sorbitol, sorbitan, etc. are preferred. As a fatty acid component which constitutes polyhydric alcohol fatty acid ester, Saturated fatty acid with 8-22 carbon atoms, for example, caprylic acid, capric acid, Lauric acid, myristic acid, Barh Myzin acid, stearic acid, arachin acid, Fatty acid of natural animal-and-vegetable-oils fat origin, such as beef tallow, cottonseed cake oil, mixed fatty acid, for example, oleum rapae, besides single fatty acid, such as behenic acid or unsaturated fatty acid, for example, oleic acid, linolic acid, linolenic acid, and RISHINOREN acid, and hydrogenated oil, is used.

0006 The aliphatic-polyhydric-alcohol fatty acid ester contained in this agricultural-chemicals coating agent is mono- obtained from above-mentioned aliphatic polyhydric alcohol and the above-mentioned fatty acid by the esterification reaction or ester exchange reaction of a conventional method, di-, or tri-ester. For example, sorbitan monolaurate, sorbitan monostearate, Glycerin laurate, a glycerin mono- KAPURI rate, glycerin monooleate, Glycerin mono- octoate, glycerin mono- soybean oil fat fatty acid ester, triglycerol monooleate, glycerin monopalmitate, polyglyceryl fatty acid ester, etc. are used suitably. Polyoxyethylene alkyl phenyl ether, polyoxyethylene nonylphenyl ether, and lauryl dihydroxyethylamine are also preferred. Although these aliphatic-polyhydric-alcohol fatty acid ester may be used alone, it may be used combining two or more sorts. As phospholipid contained in this agricultural-chemicals coating agent, the vegetable lecithin separated from vegetable oil or yolk lecithin and the phosphatidylcholine separated from these, phosphatidylethanolamine, phosphatidylinositol, etc. can be used. Refined lecithin or a phosphatidylethanolamine, and a phosphatidylinositol are **among these** preferred. Although such phospholipid may be used alone, it may be used combining two or more sorts.